Caravan & Leisure

Combi Series
Interactive Inverter-Chargers

POWERTECH

RICH ELECTRIC

TECH BRANDS by ELECTUS DISTRIBUTION

At a glance...

- Powerful sinewave inverter, battery charger and auto transfer switch in one unit
- Compact design with big power handling
- Enough power to take life's creature comforts on the road
- Output power guaranteed up to a phenominal 70°C
- Intelligent power management
- Automatically change between park power, generator power and inverter power
- Automatically charge batteries when park power or generator power is connected
- Power support feature - boost generator/park power with inverter power, allowing for a smaller generator and avoids tripping park circuit breakers
- Options available for full control and monitoring of solar panels, AC generator, DC charging, DC loads, etc
- Expanding options allow for cost effective and simple upgrades
- Designed in Australia to suit harsh Australian conditions
- 2 year factory backed warranty (optional 5 year warranty)

Whether spending months on the road touring the country, or spending every other weekend down the coast at a favourite isolated fishing spot, taking life's creature comforts goes a long way to making each getaway ever more memorable. When it comes to supplying power to a caravan or motorhome, using a Rich Electric Combi Series interactive inverter-charger is a sure way to guarantee reliable power with enough grunt to keep stable operation of the most important creature comforts throughout any holiday.

Be it adventuring across the remote top end of Australia, cruising up the coast stopping at coastal caravan parks, or spending a week down at the lake, the Rich Electric Combi Series is perfectly suited to any application where mobile power is required.

Models SC-1500 (12V) & SC-3000 (24V) pictured (above)

Set, Forget, Relax

- No manual switching between battery power, park power and generator power
- Automatic resumption of battery charging
- Fully integrated & automatic operation
- Big power capacity

When touring the open road, or relaxing at the campsite of a favourite holiday destination, the last thing anyone should have to worry about is operating and controlling the power system. Holidays are for relaxation and enjoyment, not fussing over switches and connections to make sure they are correctly set every time you select a different source of power. With a Rich Electric Combi Series Interactive inverter-charger, you can forget these headaches and time wasting exercises, and get back to enjoying your well earned holidays.

Manually switching between different sources of power, making sure the battery charger kicks in once AC power is connected, making sure not to avoid overloading the park power circuit breaker, or being careful not to overload the generator are all things that the Combi Series Interactive inverter-charger can take care of for you, thanks to its 3-in-1 interactive design.

With a Combi Series Interactive Inverter-Charger, multiple sources of power can all be connected to your system and automatically managed and controlled by the Combi.

Power can be sourced from renewable solar, park power, generator power and the engine alternator, ensuring that no matter what source of power is available, the Combi will make it available. What's more, is that Combi Series units can be programmed to know the power limitations of your various AC power sources, and can prevent them being overloaded by making use of the Power Support feature's ability to boost power. It can even know whether park power or a generator has been connected, and adjust its settings accordingly (optional external ATS required).

Not only can a Combi Series Interactive inverter-charger manage the power system automatically, it can also provide enough power to take some creature comforts with you on your travels. Comforts such as air conditioning no longer have to be reserved for running from park power or a generator; Combi Series Interactive inverter-chargers have enough power to run such appliances directly off the batteries*, giving you the freedom to enjoy your touring and holidays no matter what route or destination.

*Ability dependent on inverter sizing, battery capacity, and specifications of individual appliances.

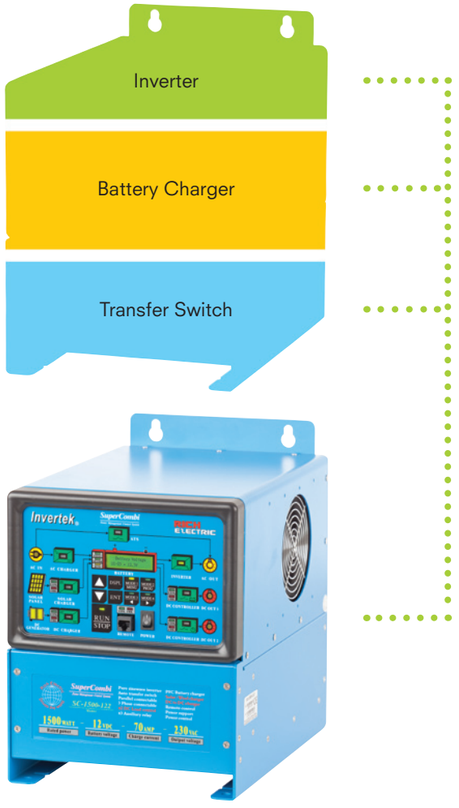
Combi Series

Main Features

3 Units In 1

Packed inside the Combi Series Interactive inverter-chargers are three main core elements: a powerful low frequency pure sinewave inverter, a high power 4-stage battery charger, and a fast action automatic AC changeover switch. By having all three units combined into the one product saves on valuable space, weight, and reduces installation complexities.

All features are seamlessly integrated to give fully automatic operation without any manual switching required. So if you turn on your generator or plug into a powered campsite, the Combi will automatically start charging the batteries and supply power to your appliances from the generator or park power input. Then, when you disconnect from generator power or park power, the Combi will automatically change over to inverter power, drawing energy from the batteries.



Power Output

Continuous output @ 70°C	Max	Surge	Charge	Output
1500W	3000W	4500W	35A at 24VDC	Pure Sinewave
3000W	6000W	9000W	70A at 24VDC	Pure Sinewave

By utilising a low frequency design, which employs a large torroidal transformer, the Combi Series interactive inverter-chargers are capable of handling heavy start up loads such as air conditioners and domestic AC fridges*, so even when you aren't on a powered site you can still have all the mod-cons available.

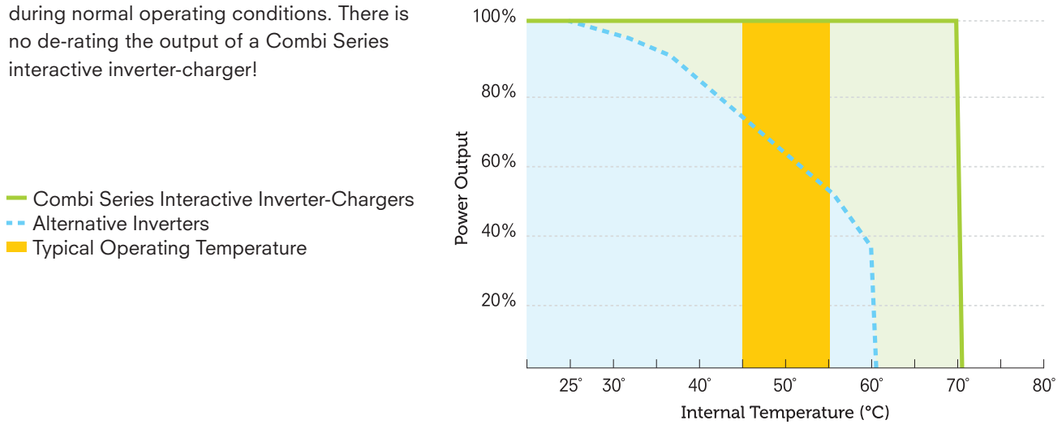
The high current 4-stage AC battery charger (up to 140A on 12V-3000W models) ensures that maximum charge is delivered when AC power is available, charging your batteries up faster. This provides a greater chance of a full recharge, even on a short stay at a powered site, and reduces the necessary run time of the generator.

*depends on specifications of individual air-con or fridge, and what other appliances are being used at the time.

Temperature Ratings

Most inverters on the market are rated at an internal ambient temperature of 25°C, and due to a phenomenon known as "de-rating" their actual output power reduces as the operating temperature increases. This temperature is the ambient temperature INSIDE the inverter, which is often 10-15°C higher than the surrounding environment, meaning that an inverter operating on a typically warm 30°C day will actually be running at 40-45°C inside the case. This would typically only provide around 70% of full rated output. In hot outback conditions on a 40°C+ day, the inverter would be running at over 55°C - in these conditions a Combi Series unit will be providing over 50% more power than an alternative inverter.

Combi Series interactive inverter-chargers are rated at 70°C, meaning that they are guaranteed to provide their FULL rated power output right up to 70°C (thermal shutdown at 71°C). This means an extra 30% or more extra power than other inverters rated at 25°C during normal operating conditions. There is no de-rating the output of a Combi Series interactive inverter-charger!



Power Support

It's an all too common occurrence that caravaners trip the 15A circuit breakers on a powered van site – all it takes is to be boiling the kettle and for the air-con to kick on, and the 15A breaker will trip out. Not with a Combi!

You can program the CombiPlus/SuperCombi with the maximum power available from park power, so that the Combi will not take any more than that limit. If the 240V appliances exceed the limit, the Combi will provide the extra power via the inverter – BOOSTING the output power.

This feature is also a lifesaver for use with generators; avoiding accidental overloads and preventing excessive load being placed on the generator.

Dynamic Power Shifting

As well as being able to boost the output power, the CombiPlus and SuperCombi have another special feature that allows you to run a much smaller generator than would otherwise be needed.

Dynamic Power Shifting is a feature for heavy startup loads such as an air-con unit, which places the heavy startup load on the inverter, and then once the load has stabilised the Combi slowly transfers the load across to the generator.

So now, instead of needing a big 3kVA or larger generator to kick over the air-con unit, it is possible to use a far smaller unit.

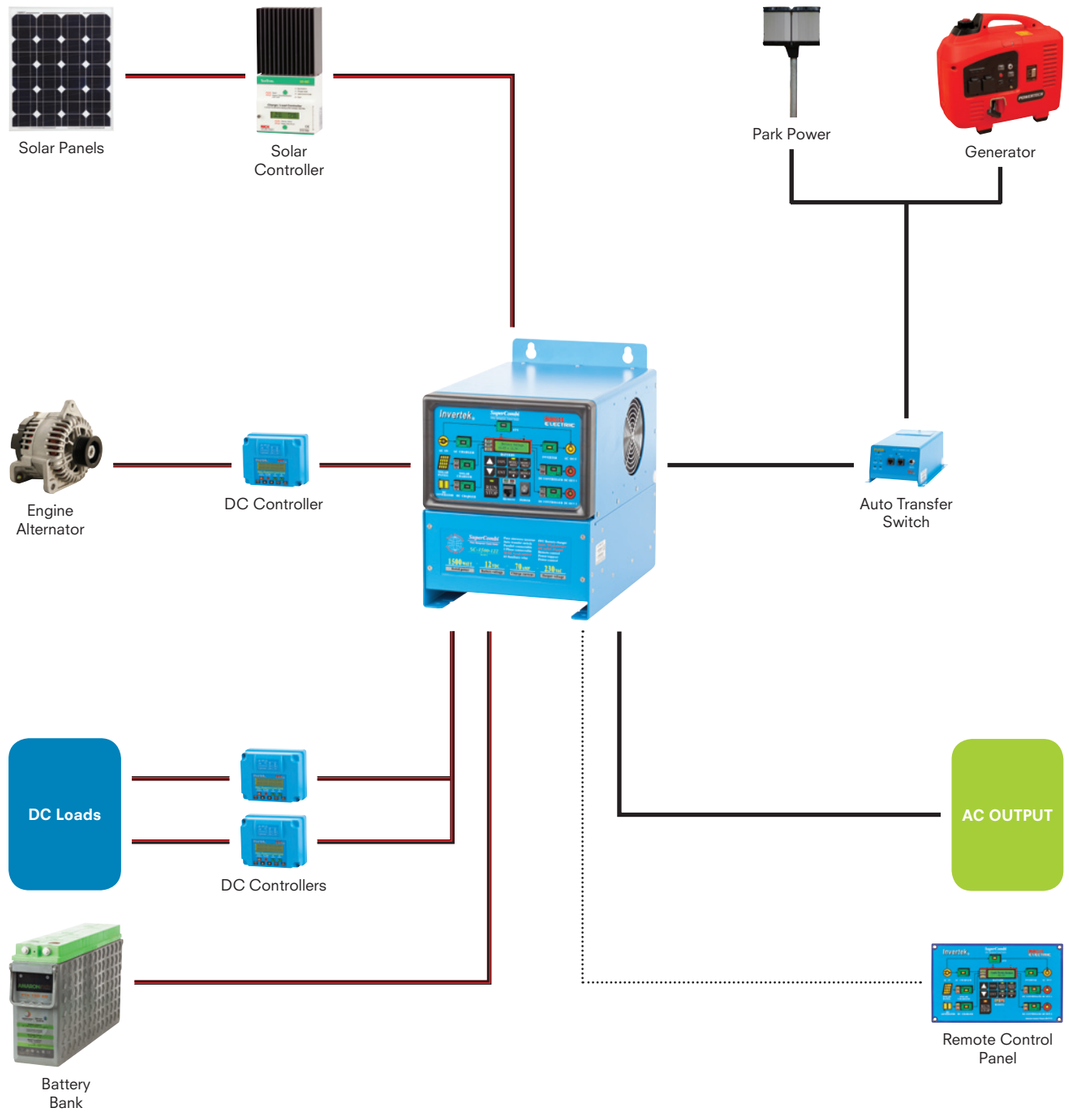
Motor Home System Install

Centralised System Control

With a correctly configured system and also using some of the other Rich Electric products available, you can centrally control and even automate all or part of your power system. Centrally control and monitor battery charging, solar charging, DC charging from engine alternator (SuperCombi only), DC load control (SuperCombi only), as well as auto-start the generator when required*, switch and share the load between generator, park power and inverter power depending on your 240V loads, and many more functions; all automatically and centrally with the one unit. Furthermore, adding the optional remote control panels gives full control and monitoring from within the caravan or motorhome, without having to access the areas where the inverter is installed.

This expandability of the SuperCombi and CombiPlus systems allows you to grow your power system in stages

*requires generator with compatible 2-wire auto-start functionality



Note: DC Load Controller and DC Generator input only available on the SuperCombi.

For information and specifications on our full range of solar panels, batteries, solar controllers, generators, mounting hardware and other associated products, as well as various support tools, please visit our Power Systems website: www.techbrands.com/powertech

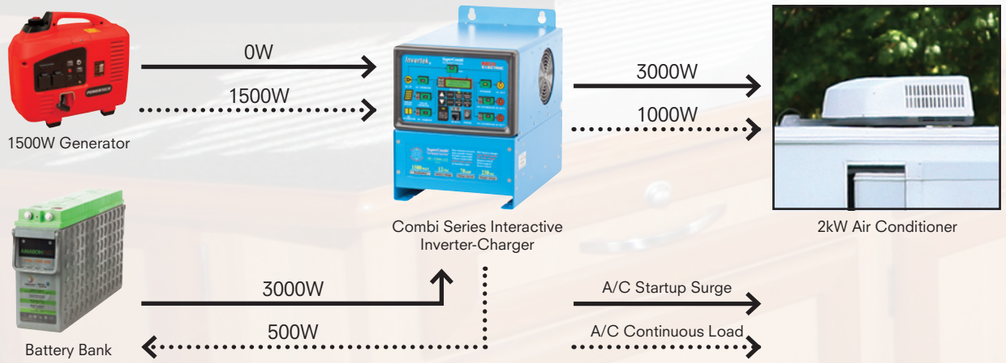
Air Conditioning

and Combi Series Interactive Inverter-Chargers

When touring the country, especially in the more remote locations, having the ability to run an air conditioner can be an absolute godsend. With a Combi Series Interactive Inverter-Charger, you can be sure that you have the power to run your air conditioner in almost any situation; when driving along, connected to park power, running off a generator, or running off the battery bank. Through extensive real world testing, the Combi Series units have been shown capable of running most well known RV style air conditioning systems from inverter power alone.*

Air-Con from Generator Power

If park power is not available, the next best option for running air conditioning is with a generator supporting the load. By utilising the Power Support feature and Dynamic Power Shifting, you no longer need an over-sized generator to cover the heavy start up load. With Dynamic Power Shifting, the Combi Series unit will take the heavy start load of the aircon using battery power, and then slowly transfer the load across to the generator once the air conditioner load stabilises. Any excess generator power then re-charges the batteries. This allows the use of a much smaller generator supporting the continuous load of the air conditioner at much greater efficiency.



Air-Con From Park Power

When connected to a powered campsite, it's common to run all the AC loads from the park power source, including the air conditioner. However, it is quite easy to overload the park power feed. Thanks to the Power Support feature of the Combi Series Interactive inverter-chargers, this can easily be avoided.

Air-Con from Battery Power

If park power and generator power is not available, the Combi Series Interactive inverter-charger can run the air conditioner itself using stored battery power. Air conditioning does draw a lot of power, so the batteries may not last very long without any suitable source of re-charging (such as from the engine alternator, etc).

NOTE: Ability of Combi Series Interactive Inverter-Chargers running air conditioners depends on battery capacity, inverter size, any other appliances running at the time, and specifications of individual air conditioner.

* Results achieved with <100W of other loads running at the same time, fully charged battery bank, with well known brand models. Results will vary depending on individual air-con specifications and system configurations.

Combi Series

Interactive Inverter-Chargers

CombiPlus® Series

Models: CP-1500-122, CP-3000-242

When the advanced features such as DC charging control, AC charger timer, remote generator timer, and DC load control are not required, the CombiPlus is the best choice. The CombiPlus still has all the power support features, remote generator start, temperature rating and power output that is expected with an Invertek Combi Series inverter-charger.

SuperCombi® Series

Models: SC-1500-122, SC-1500-242,
SC-3000-242

Carrying all the features, bells and whilstles you would expect from the flagship of the Invertek Combi Series. Carries all the features of the CombiPlus, but also has ability to auto-start/ run the generator on a timer, run the battery charger on a timer, control DC charging sources, as well as control DC load outputs.

Combi Series Inverter-Charger Features

	CombiPlus	SuperCombi
Intelligent Grid & Generator Power Management	•	•
ATS Uninterrupted AC Transfer Switch	•	•
Power Output Rated To 70°c	•	•
2-Phase And 3-Phase Capability	•	•
Stackable For More Power	•	•
Power Support Feature	•	•
Dynamic Power Shifting	•	•
4-Stage Adaptive Charging System	•	•
Solar Charging Control (Accessories Required)	•	•
Full Remote System Control (Accessories Required)	•	•
Auto Generator Start Function	•	•
Aux. Battery Charge Output	•	•
Programmable Aux. Relay Outputs (X3)	•	•
Interactive Pure Sinewave Inverter-Charger	•	•
DC Load Control (Accessories Required)		•
AC Charger Timer And Generator Timer Control		•
DC Charging Control (Accessoires Required)		•

SolarWorx Grid Inverter - 2kW

A multi-purpose grid-inverter capable of working either directly from solar panel input, or from a battery input that is charged by renewable sources - making it suitable for solar, as well as wind and hydro renewable energy. When matched with a Combi Series interactive inverter-charger, the Solarworx grid-inverter allows for hybrid system functionality.

SunStar Solar Charge Controller - 45A/60A

True commercial grade PWM (pulse width modulated) solar charge controllers, rated at either 45A or 60A. Multiple units can also be "stacked" up to a maximum of 10 units for extra capacity. Can be linked to the Combi Series models via the CombiNet system for centralised control and monitoring through the Combi inverter-charger. SunStar controllers can also be configured as a diversion load controller, which is particularly handy for use with wind turbine generators.

SunStar MPPT Solar Charge Controller - 50A

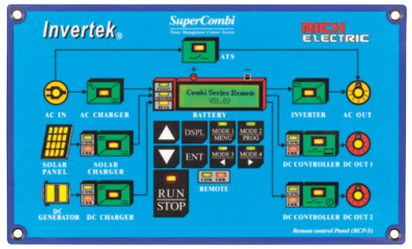
High grade maximum power point tracking (MPPT) solar charge controller for maximum battery charging efficiency, providing over 96% efficiency. Multiple units can be stacked for increased capacity up to a maximum of 16 units. With MPPT conversion technology, the solar panel array can have a nominal voltage higher than the battery charge voltage, reducing the size of DC cabling required on the solar array. Also features programmable relays outputs and a multitude of other features.

Invertek DC-DC Isolator - 140A

A fully programmable, bi-directional voltage sensitive relay that can be used in multiple applications. Can be used for dual battery charging and isolation, or as a controller for a DC charging source or as a DC load controller with low voltage disconnect/reconnect. The DC-DC isolator can be used independently, or can be combined with the SuperCombi to provide centralised control and monitoring of DC charging and DC loads. Not compatible with CombiPlus.

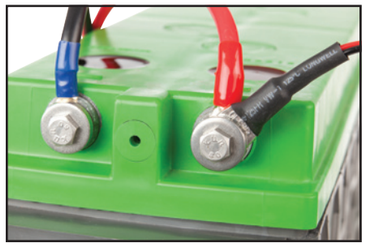
Invertek ATS - 20A

A fully automatic AC transfer switch, which automatically selects between a master and a slave AC power source. When used independently, it can be used to automatically change between mains and generator power, mains and inverter, or inverter and generator power. When linked to a Combi Series interactive inverter-charger via the CombiNet link, the ATS can change the Combi's operating mode between Mode 1 and Mode2, to instruct the Combi whether the AC input is coming from a generator, or from mains grid power.



Remote Control Panel

In most installations, the Combi inverter and battery bank will be installed in a shed, garage, or other location outside the main home/ building, where it is inconvenient to view the current status of the power system. By using the remote control panel, a complete replica of the front panel of the SuperCombi or CombiPlus can be installed in a more convenient location inside the property, giving full control and monitoring without having to venture out to wherever the Combi unit is installed.



Battery Temperature Sensor

An absolute must for any installation, and cheap insurance against damage to the very expensive battery bank. Installing the battery temp sensor tells the Combi what temperature the battery is operating at, so that the Combi can adjust charging voltage and current accordingly, to avoid permanent damage to the batteries. Batteries do get hot under heave loads, so it is important to adjust charging accordingly.

Parallel and Multi-Phase Stacking Hubs

When wanting to stack multiple Combi Series units together for extra power or multi-phase output, you will need these stacking hubs. One is for parallel stacking for boosting power, and the other is for providing multiple-phase AC output.

CombiNet Data Leads

The data cable required to link a Combi Series inverter with other accessory products on the CombiNet link. A 10-core cable with RJ50 connectors, not to be confused with a normal Cat5 data lead.

Available in various lengths.

Combi Series Inverter-Charger System Specifications

Model	SC-1500 (12V/24V)	SC-3000 (12V/24V)	CP-1500 (12V)	CP-3000 (24V)
GENERAL				
Power Sharing (Inverter Power Boosting)	10A	20A	10A	20A
Auto Transfer Switch (ATS) Generator / AC Input	16A	32A	16A	32A
Maximum Combined Power Output (Inverter + ATS)	25A	50A	25A	50A
Two and Three Phase Power Options	YES			
Parallel Operation (Stackable)	YES (Max 5x units single phase / 15x units 3-phase)			
Green Power Smart Function	YES			
Advanced Green Power Smart Function (with AC Charger Timer Function with Generator Timer)	YES		NO	
Multi Purpose Relay	3 Relays Fully Programmable (Auto Start for Generator)			
Protection	Output short circuit, Overload, Battery Over voltage / Under voltage, Battery reverse polarity detection, High input voltage ripple, DC voltage ripple. Over Temperature Protection: Transformer 105°C, Electronic & Power stage 70°C, Battery temperature 50°C			
Operating Temperature Range	Operating temp range -20°C to 70°C (Fan assisted cooling) Humidity: Max 95% (non condensing)			
Cabinet / Protection Class	Aluminum / IP20			
Weight (kgs)	21kg	27kg	21kg	27kg
Dimensions (HxWxD) mm	362 x 258 x370mm	424 x 258 x 370mm	362 x 258 x370mm	424 x 258 x 370mm

Model	SC-1500 (12V/24V)	SC-3000 (12V/24V)	CP-1500 (12V)	CP-3000 (24V)
INVERTER				
Input Voltage Range (VDC)	12V: 9.5-16V, 24V:19-32V			
Output Voltage (VAC)	210~240VAC			
Output Frequency	50Hz +/-1%			
Output Waveform	Low Frequency True Pure Sine wave			
THD	< 5%			
Power Factor	All Loads			
Switch-on Behavior	Nominal output voltage within 20 msec			
Cont. Output Power Under 70°C (W) (cos ⊠ = 1.0)	1500W	3000W	1500W	3000W
Maximum Power (W)	3000W	6000W	3000W	6000W
Surge Power (W)	4500W	9000W	4500W	9000W
Maximum Efficiency (%)	12V:82%, 24V:84%	12V:84%, 24V:86%	12V:82%	24V:86%
Zero-load Power (W)	12W (8W power save)	18W (12W power save)	12W (8W power save)	18W (12W power save)
AC CHARGER				
Input Voltage Range (VAC)	180~270VAC			
Input Frequency	45-55Hz			
Power Factor	1			
Charge Characteristic	4-Stage adaptive / Bulk-Absorption-Float-Equalize + Safe			
Maximum DC Voltage Ripple (Vrms)	< 1.25 V			
Output Charging Voltage (VDC)	12V: 12~16VDC, 24V: 24~32VDC			
Absorption Voltage Default (VDC)	12V: 14.4VDC, 24V: 28.8VDC			
Float Voltage Default (VDC)	12V: 13.8VDC, 24V: 27.6VDC			
Equalize Voltage Default (VDC)	12V: 13.2VDC, 24V: 26.4VDC			
Output Charge Voltage (VDC) min/max	12V: 8~16VDC, 24V: 11~32VDC			
Charge Current House Battery (A)	12V: 70A, 24V: 40A	12V: 140A, 24V: 70A	12V: 70A	24V: 70A
Charge Current Starter Battery (A)	4A			
AC INPUT SWITCH				
Internal Thermal Circuit Breaker	15A		30A	
Switch-over Time Inverter to AC Input	0 msec			
Switch-over Time AC Input to Inverter	0 msec			
Detection Time AC Input Fault	4 ~ 10 msec			
Trip Level AC Low Input to Inverter	180~230VAC (Default 180VAC)			
Trip Level Inverter to AC Low Input	181~231VAC (Default 187VAC)			
Trip Level Inverter to AC High Input	229~269VAC (Default 265VAC)			
Trip Level AC High Input to Inverter	230~270VAC (Default 270VAC)			
Min - Max Frequency Range (50Hz)	45-55Hz			
SOLAR CHARGER MODULE [SS-45C & SS-60C (OPTIONAL)]				
System voltage	12V, 24V, 36V, 48V (panel voltage must match battery voltage)			
Max Solar Voltage (Voc)	140V			
Max Operating voltage	68V			
Controller Power Consumption	<25mA (Including LCD)			
Solar PV Current	45A / 60A			
Parallel Connection (Stackable)	YES x10 units		YES x10 units	
Charging Characteristic	True Pulse Width Modulation (PWM)			
DC GENERATOR MODULE (OPTIONAL)				
System Voltage	12V / 24V		N/A	
Current	140A / 70A			
Parallel Connection (Stackable)	YES x5 units			
DC CONTROLLER 1 & 2 MODULE (OPTIONAL)				
System Voltage	12V / 24V		N/A	
Current	140A / 70A			
Parallel Connection (Stackable) 2x5 units	YES Up to 700Amps			
Timer Function	DC Controller 2			
Low Voltage Disconnect/ Reconnect	DC Controller 1 & 2			
AC GENERATOR AUTOMATIC TRANSFER SWITCH (OPTIONAL)				
Input Voltage Range	190-240VAC			
Frequency Range 50Hz	45~55Hz			
Switching Capacity	20A			
Trip Level Master to Slave	<180VAC			
Trip Level Slave to Master	>188VAC			
Switching Time	<12msec			
Power Continuous Stability Interval	30sec			
OPTIONAL ACCESSORIES				
Solar Charge Controller	SunStar solar controllers for control of solar charging			
DC Generator Input	DC generator module for extra source of DC charging			
DC Load Control (SW1)	Low voltage disconnect/reconnect for DC loads			
DC Load Control (SW2)	Low voltage disconnect/reconnect and cut in/out timer for DC loads			
Remote Control	Full display user panel for remote control operation and monitoring.			
Battery Temp Sensor	Battery over temperature protection & to provide correct charging characteristics			
PC Remote Interface	PC Connection kit allowing remote monitoring, programming and logging			
Stacking HUB	Allows CombiPlus & SuperCombi to be stacked together. Allows CombiPlus & SuperCombi to be connect in 2 & 3 Phase configuration.			
Data Leads	Data Leads available in different lengths for connection to Accessories.			

For further information, specifications, support tools and calculators, please visit our Power Systems website:
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Rydalmere NSW 2116 Australia
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Fax: 1300 738 500
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